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Remarks

By the present amendment, the specification has been amended to overcome certain informalities; claims 1-5, 9, and 12-14 have been amended; claim 11 has been canceled; and claims 16-19 have been added. Upon entry of the amendment, claims 1-10 and 12-19 will be pending in the application.

Information Disclosure Statement

Consideration of the Information Disclosure Statement received April 22, 2002 (Paper No. 3) and the Information Disclosure Statement received October 29, 2002 (Paper No. 7) is noted with appreciation.

Specification

Proper headings have been inserted into the specification as requested by the Examiner.

Claim Rejections - 35 USC § 112

Claims 1 and 4-15 have been rejected as being indefinite because it is unclear what dimensions qualify as a "microhole." It is respectfully submitted that such an expression is a well-understood term of art, whereby no numerical range limitation is necessary.¹ In this regard, the Examiner's attention is directed to the enclosed copy of the Lennox Lasers Tungsten Aperture technical data (Exhibit A), which indicates that apertures, such as microholes, having dimensions from 5 to 250 microns may be provided as a commercially available product. Additionally, applicant's specification explicitly recites that hole sizes have to be adapted to specific application requirements and, therefore, may be different from the specific examples given in the application as filed.²

As for claim 5, it has been amended to recite that the structure has microholes formed therein which are at least sufficiently large to permit the passage of plasma therethrough.

¹The described various embodiments of the filter elements can be produced with microholes having dimensions up to 300 micrometers.

²Page 4, lines 14-16.

Claim Rejections - 35 USC § 102

The pending claims have been rejected as being anticipated by U.S. Patent No. 2,702,270 to Donahue, U.S. Patent No. 5,190,653 to Herrick, U.K. Patent Application GB 2 063 299 A to McGeary, U.S. Patent No. 4,772,540 to Deutsch, U.S. Patent No. 4,039,397 to Klemm, and/or European Patent Application 0 621 018 A1 to Hamamoto.³ By the present amendment, claim 1 has been amended to recite a tubular filter element obtained by way of a controlled galvanic electroforming process, and to recite that the filter element has a flexible perforated laminar structure.⁴ These features of the invention provide a filter element that is easier to clean and which has reduced susceptibility to clogging.⁵ The shape, flexibility, and substantially smooth first surface combined to reduce the adherence of particles and/or dirt to the filter element during operation, and also to allow the filter element to perform during a cleaning cycle. The nature of the microholes is such that sharp edges, such as those found in certain of the cited prior art documents, are substantially reduced. Reduction in the number of sharp edges decreases the adherence of dirt and/or particles during the filtering operation and also assists in the removal of any such dirt and/or particles during a cleaning cycle.⁶

None of the cited art documents disclose or suggest such features. Accordingly, it is respectfully submitted that the claim 1 (and claims 2-19 depending therefrom) is not only novel, but non-obvious over the applied art.

³Specifically, claims 1-5, 9-10, and 14-15 have been rejected as being anticipated by U.S. Patent No. 2,702,270 to Donahue; claims 1-2, 4-5, 9-10, and 14-15 have been rejected as being anticipated by U.S. Patent No. 5,190,653 to Herrick or U.K. Patent Application GB 2 063 299 A to McGeary; claims 1-5, 9-10, and 14-15 have been rejected as being anticipated by U.S. Patent No. 4,772,540 to Deutsch; claims 1, 4-5, and 9-15 have been rejected as being anticipated by U.S. Patent No. 4,039,397 to Klemm; and claims 1 and 5-13 have been rejected as being anticipated by European Patent Application 0 621 018 A1 to Hamamoto.

⁴The basis for this amendment is to be found, for example, in previous Claim 1, on page 4, lines 20 to 21, previous Claim 11 and page 3, line 30.

⁵See page 1, lines 14 to 16.

⁶By providing a tubular filter element having a flexible perforated laminar structure, the filter element according to the claimed subject-matter is suitable for use in a filtering device such as that illustrated in Figure 1.

Conclusion

In view of the foregoing, this application is now believed to be in a condition for allowance and early action to that effect is earnestly solicited.

Respectfully submitted,

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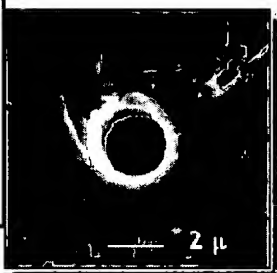
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DESCRIPTION:

Diameter:	Ø 9.5mm
Thickness:	
Centering:	⊙ ± 0.05 mm
Circularity:	○ > 1.5μ

APPLICATIONS:

Tungsten Apertures are used in high energy and power applications and are intended to be used in the optical transfer assembly of a system using a powerful laser as a source.

A practical example is the aperture within a spatial filter assembly.

For Q-Switching applications, consider a highly reflective aperture disc surface and a very high melting temperature disc material. We will custom fabricate aperture mounts to comply with the parameters of your assembly environment.

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The process for the production of the microhole is called electroforming, which is a process galvanic of production and reproduction of object through electroplating of a metal on a model (matrix) which conduct electric current.

Extended the time of deposition, the result is a electroform self supporting with thickness liked. Subsequently the electroform is separated of the matrix and he is exactly the negative of the matrix.

The matrix is microincised and during the process, the microhole are occluded with an epoxy resin, where the metal not attach.

The hole resulting in the electroform depend by the time of remainder in the electrolytic bath and of the current distributed considering the typical of the microhole; if the time is high, so the hole are small. The dimension of the diameter vary from 10 micron a 300 micron.

The principal component of the process is the electroplating tank; the dimension of the tank are proportional at the length and at max diameter of the matrix.

The galvanic bath must be continuosly lively with a pump and he is at a temperature of 55°C kepted.

Farther the cycle of electroforming are necessary other tanks for the matrix regenerate.